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Patient experiences of inpatient hospital care: a department matter and a hospital matter

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ABSTRACT

Objective To examine the added value of measuring and possibly presenting patient experiences at the department level, in addition to the hospital level, and to explore the possibility that patient experiences differ according to the 'type' of hospital department.

Design Secondary analysis of data from a widely used survey on patient experiences of Dutch inpatient hospital care [Consumer Quality Index (CQI) Inpatient Hospital Care].

Setting Inpatient hospital care experience survey of patients of 78 Dutch hospitals.

Participants A total of 15 171 randomly selected inpatients from 78 Dutch hospitals, who had at least one night of hospitalization between October 2006 and October 2007.

Main outcome measures Explained variance in patient experiences at the department level, compared with the explained variance at the hospital level. Significant differences in patient experiences between types of departments, expressed in regression coefficients. Patient experiences were measured using validated quality indicators, calculated from specific survey items.

Results Adding the department level to the analyses of patient experiences is statistically worthwhile for a number of quality indicators of the CQI Inpatient Hospital Care, and will enable the presentation of more detailed results within hospitals. Furthermore, the results indicated that there are some systematic differences in patient experiences between specific types of hospital departments across hospitals. However, the proportion of variance in experiences explained by both department and hospital is limited (max. 14%).
Conclusions Analyses of quality information on patient experiences of inpatient hospital care should not only take the hospital level, but also at the more specific department level into account.

INTRODUCTION

In the past decade, patient experiences have become an important measure for health-care quality in addition to clinical indicators of effectiveness and safety [1, 2]. An important aspect of patient experiences is that some topics can only be reported on by patients themselves, for instance the conduct and the quality of communication of health-care personnel. Also, the views of patients on the quality of care delivered may differ from that of health-care providers [3].
Patient experiences can be used for monitoring the quality of care, for health-care purchasing by health-care insurers or health plans, by patients in deciding which health-care provider to visit, but also by health-care providers themselves to improve their care [4, 5]. If experiences are measured in a standardized way across health-care institutions, differences between institutions can be identified [6]. Low scores indicate opportunities for improvement, whereas high scores show those aspects in which an institution excels. This opens up possibilities for institutions to learn from each other.
It is not always clear, however, which organizational levels are responsible for failure or success; quality information is sometimes too abstract for targeted action [7]. This is especially problematic for large health-care institutions, such as hospitals, consisting of numerous different health-care disciplines and departments. By averaging performance scores across the hospital, the poor or high performances of specific departments may be obscured. Certainly, many matters regarding hospital care are arranged on a hospital-wide basis, for example accessibility, parking, housing and food. Other aspects, however, may be determined more by the specific department, such as the availability of health-care staff, and patient-centeredness. Each department has its own policies, staff and organizational climate, influencing patient experiences in their own right [8]. A study of patient satisfaction in Dutch hospital care supports this hypothesis [9]. Arguably, if patient experiences are to be used to their full potential, it is very important to present results at the correct organizational level, in the case of hospitals at the department level. In this way, hospitals will able to correctly determine which processes are going well and which are not, and at what organizational-level issues should be tackled.
In this article, we will focus on incorporating the department level in measurements of patient experiences in Dutch inpatient hospital care. First, we will assess whether adding the department level to analyses of patient experiences leads to more informative and specific results.

If so, we will explore the possibility that patient experiences differ according to the type of hospital department. For example would it be useful to compare the results of surgical departments from different hospitals? These departments deliver roughly the same type of care. Arguably, such comparisons may be just as interesting to health-care providers and hospital managers as comparing the results of different departments or disciplines within the same hospital, if not more so. In this way, specific departments may use the results to compare themselves with similar departments in other hospitals, as well as with other departments within their own hospital. Moreover, patients needing elective care might use this information when choosing a hospital or department.
To our knowledge, differences in patients' assessment of different types of hospital departments have not yet been researched. Our research questions are:

1. To what extent are patient experiences influenced by the individual department, as opposed to the hospital as a whole?
2. Are there systematic differences in patient experiences between certain types of departments, regardless of the hospitals to which they belong?

METHODS

Data

In this study, data from the Consumer Quality Index (CQI) Inpatient Hospital Care survey were used. This is a standardized questionnaire from the CQI, the Dutch standard for measuring patient experiences [1, 10]. The items of the CQI Inpatient Hospital Care patient survey were used to calculate 14 quality indicators. These were defined in the psychometric test during the questionnaire development and are presented at the hospital level [11]. The indicator scores were constructed by calculating the average score over the items for each respondent, provided that the respondent answered half or more of the items associated with the particular indicator. As each item ranged from 1 (poor quality) to 4 (high quality), scores for each indicator also range from 1 to 4. The specific items for each quality indicator are presented in Appendix.
Data were used from the 2006/2007 psychometric test of the survey, which originally consisted of 22 380 patient questionnaires from 78 hospitals. These data were chosen because they included a high number of hospitals and also a large number of items and quality indicators; since 2007, the CQI Inpatient Hospital Care has been significantly shortened, limiting the number of items and quality indicators available. In our study, only patients who had visited a single hospital department were included in the analysis, in order to keep measurements at the department level as clear as possible. A total of 5453 patients said that they visited more than one department; their questionnaires were therefore excluded from the analysis. The age, education, sex, origin and physical and mental health status of patients were used as case-mix adjusters in the analyses, as they have been known to influence the response tendencies of survey participants [12–14]. Therefore, questionnaires missing any of these patient characteristics were excluded (1548 cases). To ensure more reliable analyses, departments with insufficient representation were excluded. These were defined as departments where there was data for fewer than 20 hospitals (38 cases were excluded for this reason) and/or with fewer than 100 cases (170 cases were excluded for this reason). In the end, 15 171 patient questionnaires were

included for analysis, reporting on 14 different types of departments in 78 hospitals (1012 departments in total). The patient characteristics can be found in Table 1. Compared with these included patients, excluded patients proved to be on average lower educated, slightly older and in poorer physical and psychological health (analyses not shown).

[TABLE 1][TABLE 2]

The number of questionnaires per type of department is presented in Table 2.

Statistical analysis

Hierarchical linear modelling with random intercepts (and no random slopes) was used [15]. Model 1 was a two-level model with patients nested in hospitals. Model 2 was a three-level model with patients nested in departments that are nested in hospitals. Both models were controlled for a number of case-mix variables, as fixed effects. The only difference was the added department level. A significant Likelihood ratio test of these two models showed whether the model with the added department level fitted the data better.
Model 2 also provided the variances at the hospital, department and individual level. The variance at the hospital level was compared with the sum of the variances at the department and hospital levels. This proportion was expressed in an intra-class correlation (ICC), which has a theoretical range of 0–1 [16]. If the ICC is between 0.5 and 1, the variability in indicator scores is more dependent on the hospital than on the department. If the ICC is between 0 and 0.5, the opposite applies:

$$\mathrm{ICC} = \frac{\mathrm{Var}(hospital)}{(\mathrm{Var}(department) + \mathrm{Var}(hospital))}$$

In order to answer our second research question, Model 3 was specified. This was done by adding department types as covariates (dummies) to Model 2. From these analyses, a χ^2 test showed whether there is variability in patient experiences due to department type. Furthermore, pair-wise comparisons between coefficients of department types from Model 3 showed whether there were significant differences in experiences between specific department types (null hypotheses: difference = 0), after a Bonferroni–Holm correction [17]. Regression coefficients [including 95% confidence interval (CI)] for department types were used to illustrate these differences.
All analyses were performed using the STATA 12.1 statistical package [18].

RESULTS

Table 3 shows the results of the analyses of Models 1 and 2 for each of the quality indicators. The first two columns of numbers show the number of items from which the indicator is calculated, the associated Cronbach's alpha of the indicator and the number of patients on which the indicator scores are based. Then the *P*-value for the Likelihood-ratio test is reported for each indicator. Adding the department as a level

significantly improved the multilevel model for 8 of the 14 indicators (shown in bold). 'Hospital accessibility' is one of these eight, even though the items associated with this indicator focus exclusively on hospital characteristics. Also, adding the department level to the model seemed statistically irrelevant for the 'Medication information' and 'Reception at department' indicators.

[TABLE 3]

Compared with the total variance, the influence of both department and hospital was limited, as can be seen in the antepenultimate column of Table 3. For all indicators, 5% or less of the variability in scores could be attributed to the department and the hospital, with the exception of 'Hospital accessibility' (ICC = 0.14). Specifically, the ICCs were lowest for the models that did not improve when the department level was added (not in bold).
The ICCs for hospital and department variances are presented in the penultimate column; the indicators have been sorted in descending order of these ICCs. The ICCs show which level has a greater influence on indicator scores. The results were mixed; the first eight indicators ('Medication information' to 'Treatment information') seemed to depend more on the hospital; 70–100% of the department and hospital variance in these indicators is explained by differences between hospitals. The last four indicators ('Doctor communication' to 'Information at discharge') seemed to be influenced more by the department than by the hospital; 62–73% of the department and hospital variance in these indicators was explained at the department level.
In short, with regard to our first research question, the variance in 8 of the 14 quality indicators was influenced significantly by both the department and the hospital.
For the second research question, differences in scores between the 14 department types were explored using Model 3 (Model 2 including types of department as dummy covariates). These analyses were performed for the eight quality indicators in bold in Table 3, as the multilevel models for these indicators showed a significant influence of the department level. For each indicator, 91 pair-wise comparisons were made between the coefficients of the 14 department types (13+12+11 … etc.), using a Bonferroni–Holm correction for multiple testing. Table 4 provides an overview of the results.

[TABLE 4]

For seven of the eight indicators, the overall χ^2 test showed a significant influence of department types as covariates ($P < 0.05$). Differences between types of departments were especially prominent for the 'Stay' and 'Information at discharge' quality indicators. Also, there were more differences between departments regarding the communication with doctors than regarding communication with nurses.
As it is impractical to present over 700 comparisons (91 pairs × 8 indicators), our results are illustrated by showing the 95% CIs in Fig. 1 of the two quality indicators with the most differences: 'Stay' and 'Information at discharge'. The latter especially showed substantial differences. It seemed that the quality of the information presented to the patient when being discharged differed systematically between different types of department. Also, the figure shows room for improvement on both quality indicators.

[FIGURE 1]

DISCUSSION

In this article, we have demonstrated that adding the department level to the analyses of patient experiences is statistically worthwhile for a number of quality indicators of the CQI Inpatient Hospital Care. For most quality aspects, the hospital had a bigger influence on patient experiences than the department. For quality aspects such as communication with doctors, the treatment of pain and information at discharge, however, experiences seem to be influenced more by the care in the specific department. Also, our results indicated that there are some systematic differences in patient experiences between types of hospital departments across hospitals. These results underline the importance of analysing quality information on inpatient hospital care not only at the hospital level, but also at the more specific department level. However, there are some matters that should still be addressed.

Although we were interested primarily in how the variability at the hospital level and at the department level related to each other, we found that both the hospital and the individual department accounted for only a limited proportion of the total variance in indicator scores; the ICCs ranged from 0.01 to 0.14. This means that the influence of both department and hospital on patient experiences is small. This finding is not uncommon; the variance in patient experiences and satisfaction that is explained at the institution, department and even physician levels has been shown to be limited [10, 19–21].

There are two possible explanations for the significant differences between types of departments across hospitals, which are not mutually exclusive. First, patients may assess their experiences differently if they are visiting a specific type of department. This may be due to different expectations and the extent to which these are met; patient satisfaction, for instance, is considered an interaction between expectations and experiences [22]. If expectations of patients differ with regard to the type of department, for instance because of anxiety or the severity of their health problem, inclusion of department type as a covariate in the analyses could be considered. Second, specific types of departments may perform less well in the eyes of their patients. In this case, it can be useful for the departments to compare their procedures and protocols with those of department types with high indicator scores in order to improve their care. Based on our data, however, it was not possible to determine how these two explanations are interrelated.

With regard to the quality indicators, we found a few seemingly counterintuitive results. The ‘Reception at department’ indicator showed a high ICC at the hospital level, and the addition of the department level did not lead to a significantly better model. This is strange, since the patient's reception at the department is arguably highly dependent on the staff of the specific department or ward. It is likely, however, that this reception is mainly dictated by a hospital-wide protocol. In recent years, much attention has been paid to this in the Netherlands. Second, the ‘Hospital accessibility’ indicator, on the other hand, did show a significant influence of the department level, even though the associated survey items are all about issues arranged at the hospital level. A possible explanation for this is the influence of the patient's health problem. It may be that patients from certain departments experience accessibility (parking, public transport) differently due to their condition, for instance

if it influences their mobility. In short, these findings show the importance of thoroughly checking associations and relationships within survey data.

Strengths, limitations and future research

We were able to use a large, comprehensive dataset for this research, including a wide variety of patient experiences from many different hospital departments and hospitals. In fact, more than half of all Dutch hospitals were included in our data. Also, our analyses were controlled for important patient characteristics. Therefore, we are confident that our findings are valid and largely representative for inpatient hospital care in the Netherlands.

However, there are some limitations to our research. First, to ensure clear results, we had to exclude respondents who visited more than one department in the hospital. This led to a substantial data reduction. For future research, it could be very interesting to let patients complete short experience questionnaires on each of the departments separately. This would allow for inpatient comparisons of different departments. Also, it might be interesting to compare the experiences of patients depending on the severity of their health problem. Patients who are undergoing invasive surgery or treatment may perceive the hospital care differently from patients visiting the hospital with a minor or straightforward health problem. Identifying the severity of health problems, however, may present a difficult challenge. Another point with regard to patient characteristics is the origin of the patients. Although this was adjusted for in the analyses, it is possible that differences in scores are not only due to different response tendencies, but in fact due to differences in the care they received. If this is the case, the use of origin (or ethnicity) as a case-mix adjuster is questionable.

Furthermore, it cannot be ruled out that patients' experiences are not solely based on their experiences on either hospital or department level; patients may have been transferred between different departments and have had contact with staff from different departments, thus also possibly influencing their experiences.

It is important to note the number of cases used to calculate the scores for the quality indicators. As can be seen from Table 2, the number of questionnaires per department was limited in several departments and hospitals. With regard to the analyses for our first research question, this was not problematic, as the number of cases at second (department) and third (hospital) levels are more important [23]. With regard to our second research question, however, we observed that significant differences were less common between departments with a small number of cases, even though we ensured each department type included had at least 100 cases. In this respect, it would be worthwhile to consider the number of patients needed at the department level in future surveys to allow reliable comparisons between departments [21].

It is known that the quality of care may depend on the organizational climate of the health-care institution, such as the hospital and the hospital departments [9, 24]. Good leadership, delegation of responsibilities, communication between staff members and a safe environment (both physically and psychologically) are all aspects associated with higher levels of quality of care. Unfortunately, none of these covariates were available in our data. In future research, adding such covariates to the analyses of patient experiences could shed more light on the differences found between hospital departments.

In short, taking into account the department level in the analyses of patient experiences of inpatient hospital care seems valid, but there are still some matters to look into before results of individual departments should be reported. If these matters can be resolved, the public presentation of results of individual departments may be used to inform patients and help departments in improving care.

APPENDIX

Table A1 CQI inpatient hospital care quality indicators and associated items[a]

Quality indicator	No.	Survey item	Response categories
Hospital accessibility	3	Has the accessibility of the hospital using your own means of transport been a problem?	Major problem (1); Minor problem (2.5); No problem (4); Not applicable (−)
	4	Have the number of parking spaces at the hospital been a problem?	Ditto
	5	Has the accessibility of the hospital by public transport (bus, train) been a problem?	Ditto
Communication on admission	14	Were the following items discussed with you on your admission to the hospital?	
	a.	the state of affairs at the department	No (1); Yes (4); Don't remember (−)
	b.	your rights as a patient (complaints procedure, etc.)	Ditto
	c.	the house rules to be observed by patients	Ditto
	d.	what will happen during hospitalization	Ditto
	e.	card or film on ‘patient safety’	Ditto
	f.	the person in the hospital to contact if you have questions	Ditto
	g.	your contact (partner) at home	Ditto
	h.	who should or should not be informed of your hospitalization	Ditto
	i.	what medication you are taking	Ditto
	j.	whether or not you wish to be resuscitated	Ditto

Quality indicator	No.	Survey item	Response categories
	k.	any dietary and nutritional requirements	Ditto
	l.	possible hypersensitivity to substances/medicines	Ditto
	m.	any previous hospitalizations in the last 12 months	Ditto
	n.	your provisional discharge date	Ditto
	o.	your personal needs during hospitalization	Ditto
Reception at department		During your reception at the department, …	
	16	were you treated with respect?	No (1); Yes (4)
	17	did the staff listen carefully to you?	Ditto
	18	did the staff take enough time for you?	Ditto
	19	were things explained in an understandable way?	Ditto
Nurse communication		During your hospitalization, how often did the nursing staff …	
	22	treat you with respect?	Never (1); Sometimes (2); Usually (3); Always (4)
	23	listen carefully to you?	Ditto
	24	take enough time for you?	Ditto
	26	explain things in an understandable way?	Ditto
Conflicting information[a]	20	During your reception at the department, did you receive inconsistent information from the staff members?	Yes (1); No (4)
	27	During your hospitalization, how often did the nursing staff give you information that was inconsistent with the information from other providers?	Always (1); Usually (2); Sometimes (3); Never (4)
	39	During your hospitalization, how often did the doctors give you information that was inconsistent with the information from other providers?	Ditto
Doctor			

Quality indicator	No.	Survey item	Response categories
communication			
		During your hospitalization, how often did the doctors …	
	34	treat you with respect?	Never (1); Sometimes (2); Usually (3); Always (4)
	35	listen carefully to you?	Ditto
	36	take enough time for you?	Ditto
	38	explain things in an understandable way?	Ditto
Coordination		During your hospitalization, to what extent did you …	
	31	experience the coordination of work between the nurses as a problem?	Major problem (1); Minor problem (2.5); No problem (4);
	43	experience the coordination of work between the doctors as a problem?	Ditto
	44	experience the coordination of work between the nurses and doctors as a problem?	Ditto
Stay		During your hospitalization,	
	46	was the temperature of your room comfortable?	Never (1); Sometimes (2); Usually (3); Always (4)
	47	was your room clean?	Ditto
	48	were the toilet, shower and bathroom clean?	Ditto
	49	was it quiet in the vicinity of your room at night (between 11 pm and 6 am)?	Ditto
	56	was the food good?	Ditto
Autonomy		During your hospitalization, …	
	50	did you have enough privacy when receiving personal care?	Never (1); Sometimes (2); Usually (3); Always

Quality indicator	No.	Survey item	Response categories
			(4)
	51	did you have enough privacy during visiting hours?	Ditto
	52	could you receive visitors at the times you wanted to?	Ditto
	53	could you retire to a quiet place if you wanted to?	Ditto
	54	could you bathe, shower or wash at the times you wanted to?	Ditto
	58	could you eat at the times you wanted to?	Ditto
	69	How often did you have a say in matters concerning the treatments that were important to you?	Ditto
Treatment information		During your hospitalization, did the doctors or nurses …	
	59	tell you beforehand why a treatment, examination or intervention was needed?	Never (1); Sometimes (2); Usually (3); Always (4)
	60	tell you beforehand what a treatment, examination or intervention meant exactly?	Ditto
	61	tell you in an understandable way what the side effects or consequences could be of a treatment, examination or intervention?	Ditto
Pain treatment	63	Did the doctors, nurses or other hospital staff respond quickly when you indicated that you were in pain?	Never (1); Sometimes (2); Usually (3); Always (4); Not applicable (−)
	64	Was your pain kept properly under control during your hospitalization?	Never (1); Sometimes (2); Usually (3); Always (4)
	65	Did doctors, nurses or other hospital staff do everything they could to ease your pain during your hospitalization?	Ditto
Medication information		Before you got a new medicine or a change in medication, …	
	67	did they tell you why the new	Never (1);

Quality indicator	No.	Survey item	Response categories
		medicine was being used?	Sometimes (2); Usually (3); Always (4)
	68	did they explain possible side effects in an understandable way?	Ditto
Safety		During your hospitalization, …	
	73	did you feel safe with the doctors, nurses and other hospital staff?	Never (1); Sometimes (2); Usually (3); Always (4)
	74	did the hospital staff pay enough attention to preventing accidents, in your opinion?	Ditto
	75	when medication was provided, did staff check whether the medication was intended for you, for example by asking your name or checking your wristband?	Never (1); Sometimes (2); Usually (3); Always (4); Not applicable (−)
	78	before a treatment, examination or intervention, was it verified that you were the right person, for example by asking your name and date of birth?	Ditto
	79	did the hospital staff pay enough attention to unsafe situations, in your opinion?	Never (1); Sometimes (2); Usually (3); Always (4)
Information on discharge	81	When you left the hospital, did the hospital sufficiently inform other key individuals and/or institutions (for example the general practitioner, home care organization or rehabilitation centre)?	No (1); Yes (4); Don't know (−)
		On your discharge from the hospital, did you receive written and/or verbal information …	
	82	about your use of medication after hospitalization?	No (1); Yes (4); Don't know (−); Not applicable (−)
	84	about the use of these new medicines? (method of ingestion, frequency, time of day)	No (1); Yes (4); Don't know/remember (−)
	85	about the use of these medicines in	Ditto

Quality indicator	No.	Survey item	Response categories
		combination with medication you were already using?	
	86	about any health problems you had to be on the lookout for after your discharge?	Ditto
	87	about what activities you could or could not do?	Ditto
		Before your discharge from this hospital, …	
	88	did you talk to doctors, nurses or other hospital staff about the help you might need after your discharge?	Ditto
	90	did you receive written and/or verbal information from doctors, nurses or other hospital staff on what to do if problems occur after your discharge?	Ditto

[a]Translated one-way only by the authors, for the purpose of this manuscript.

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TABLES

Table 1 Patient characteristics (*N* = 15 171)

	N	%
Age (years)		
18–34	1796	11.8
35–54	3557	23.5
55–64 (ref)	3104	20.5
65–74	3457	22.8
75+	3257	21.5
Sex		
Male	6482	42.7
Female (ref)	8689	57.3
Education		
Low (ref)	7096	46.8
Medium	6300	41.5
High	1775	11.7
Self-reported physical health		
Moderate–poor	5687	38.7
Good (ref)	6770	44.6
Very good–excellent	2534	16.7
Self-reported mental health		
Moderate–poor	1795	11.8
Good (ref)	7314	48.2
Very good–excellent	6062	40.0
Origin/ethnicity		
Native	13 189	86.9
Immigrant	1982	13.1

Table 2 Number of cases per hospital department (*N* = 15 171)

				Per hospital		
Department	***N* (cases)**	**%**	***N* (hospitals)**	**Mean no. of cases**	**Min.**	**Max.**
Cardiology	3203	21.1	78	41.1	12	82
Dermatology	120	0.8	56	2.1	1	8
Surgery	2074	13.7	78	26.6	10	60
Internal medicine	828	5.5	78	10.6	2	25
Ear, Nose, and Throat	650	4.3	78	8.3	1	25
Pulmonary diseases	1106	7.3	78	14.2	3	32
Gastroenterology	647	4.3	78	8.3	1	21
Gynaecology	2158	14.2	78	27.7	4	61
Neurosurgery	443	2.9	77	5.8	1	21
Neurology	833	5.5	78	10.7	3	20
Ophthalmology	103	0.7	38	2.7	1	17
Orthopaedics	1608	10.6	78	20.6	6	56
Plastic surgery	259	1.7	61	4.2	1	15
Urology	1139	7.5	78	14.6	2	35

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Table 3 Results of multilevel analyses per quality indicator, sorted by ICC of hospital versus hospital and department

Quality indicator	(# items; α)	*N* (patients)[a]	Model 1			Model 2				ICC: hospital and department versus total	ICC: hospital versus. hospital and department	*P*-value LR-test Model 2 versus Model 1[b]
			Constant	Variance (patient)	Variance (hospital)	Constant	Variance (patient)	Variance (department)	Variance (hospital)			
Medication information	(2; 0.67)	4440	3.24	0.870	0.010	3.24	0.870	0.000	0.010	0.01	1.00	1.00
Reception at department	(4; 0.73)	14 058	3.91	0.233	0.002	3.91	0.233	0.000	0.002	0.01	0.95	0.90
Hospital accessibility	(3; 0.65)	12 794	3.65	0.471	0.073	3.65	0.466	0.005	0.072	0.14	0.93	**0.00**
Safety	(5; 0.76)	14 707	3.48	0.355	0.007	3.48	0.354	0.001	0.007	0.02	0.86	0.24
Stay	(5; 0.69)	15 099	3.49	0.245	0.010	3.48	0.242	0.003	0.009	0.05	0.75	**0.00**
Coordination	(3; 0.72)	14 895	3.89	0.255	0.001	3.89	0.254	0.000	0.001	0.01	0.74	0.47
Nurse communication	(4; 0.86)	15 064	3.54	0.305	0.005	3.54	0.303	0.002	0.005	0.02	0.70	**0.02**
Treatment information	(3; 0.81)	14 831	3.64	0.450	0.004	3.64	0.449	0.001	0.004	0.01	0.70	0.25
Communication on admission	(15; 0.79)	10 762	3.12	0.419	0.006	3.12	0.414	0.005	0.005	0.02	0.50	**0.00**
Autonomy	(7; 0.76)	14 890	3.15	0.386	0.007	3.15	0.381	0.006	0.006	0.03	0.49	**0.00**
Doctor communication	(4; 0.89)	14 941	3.63	0.380	0.003	3.63	0.376	0.004	0.003	0.02	0.38	**0.00**
Conflicting information	(3; 0.78)	14 790	3.51	0.411	0.001	3.51	0.410	0.002	0.001	0.01	0.33	0.15
Pain treatment	(3; 0.88)	7824	3.63	0.395	0.003	3.63	0.390	0.006	0.002	0.02	0.30	**0.00**
Information at discharge	(8; 0.78)	13 304	3.38	0.731	0.009	3.37	0.714	0.021	0.008	0.04	0.27	**0.00**

All analyses are case-mix adjusted for patient's age (ref: 55-64), sex (ref: female), origin (ref: native), education (ref: low), physical health (ref: good) and mental health (ref: good).

[a]*N* (hospitals) = 78, *N* (departments) = 800–1012.

[b]Significant if $P < 0.05$ in bold.

Table 4 Influence of department type on quality indicator scores and pair-wise comparisons of department types

Indicator	*P*-value χ^2 test	Significant pair-wise differences[a]	
		N	(%)
Hospital accessibility	0.051	0	(0.0)
Stay	0.000	22	(24.2)
Nurse communication	0.000	4	(4.4)
Communication on admission	0.000	19	(20.9)
Autonomy	0.000	11	(12.1)
Doctor communication	0.000	12	(13.2)
Pain treatment	0.000	6	(6.6)
Information at discharge	0.000	48	(52.7)

- [a]*N* (comparisons) = 91 for each indicator, using Bonferroni–Holm correction ($P < 0.05$).

Figure 1 Average scores and 95% confidence intervals per department on 'Stay' and 'Information at discharge' indicators (range 1–4).